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# A TREATISE ON STAMMERING.

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# A TREATISE

ON THE

# NATURE AND CAUSES

OF

# STAMMERING,

WITH

# AN EXPOSITION

OF

# THE BEST METHODS OF CURE,

MEDICAL, SURGICAL, AND EDUCATIONAL.

---

BY A PHYSICIAN.

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LONDON:

SAMUEL HIGHLEY, 32, FLEET STREET,

OPPOSITE ST. DUNSTAN'S CHURCH.

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1843.

TO

JAS. YEARSLEY, ESQ., M.R.C.S.

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DEAR SIR,

In looking round for a name to which the following pages may, with propriety, be inscribed, none comes more prominently before me, or appears more worthy of the distinction, than your own.

The application of professional minds to the subject of stammering has been of rare occurrence. The treatment of this grievous infirmity has been tacitly consigned to the domain of the empiric. You have led the way to a more just appreciation of its importance, and for this, independent of the valuable results of your investigations, you are entitled to the gratitude of mankind. To you belongs the merit of having

first called in the aid of surgery in the treatment of stammering. The continental surgeons, Dieffenbach, Amussat, Baudens, Phillips, &c. all must yield to you the priority of the idea not less than the amount of success with which the respective operations proposed have been attended. In point of fact, yours are the only operations now performed in this country.

But the important step thus gained in the treatment of stammering is eclipsed by your more recent classification of vocal impediments, which serves as a beacon to the employment of your now modified surgical operations, to the employment of medical treatment, or to the exclusion of both, and a reliance on a judicious educational training alone.

For want of such beacon, your treatment has been blindly and indiscriminately adopted by others, so that, from its many failures, which were inevitable, its value has been questioned,

Time, however, and a more extensive promulgation of your matured views and experience upon the subject, will soon correct such errors in practice.

Neither is the meed of praise the less merited for the temper and judgment with which you have met the attacks of your assailants, the Professors of Elocution, as they choose to call themselves. To make you appear an indiscriminate operator upon all cases which came before you, was a gross mis-representation of facts, as hundreds besides myself, who, by your liberality, have been admitted to see your practice, can testify.

In your recent demonstrations before the profession, for the purpose of proving the truth of your classification, every practitioner must readily bear testimony to the discrimination, judgment, and success with which you have prescribed, individually or in combination,

medical, surgical, and educational treatment. Instead, therefore, of being prejudiced in favor of, or wedded to the particular treatment you yourself originated, I cannot but regard you as having contributed more than any other man, to a just appreciation of the respective value of medical, surgical, and educational processes, and as having pointed out the particular phases and varieties of vocal impediment, to which each or all of these modes of treatment are applicable.

Believe me,

Dear Sir,

Your obedient and humble Servant,

* * * * *

March 7th, 1843.

# PREFACE.

I cannot offer as an excuse for writing a book on Stammering, that there is a dearth of publications on the subject. Treatises and essays are abundant, but, if we except the attention recently excited by the performance of surgical operations for the cure of this impediment, medical men had almost relinquished its treatment, and thus, though properly coming within the province of the profession, it has been assumed by teachers of elocution and empirics.

On this account, as far as the Elocutionists are concerned, the literature of the subject, if it deserve the name, manifests, I do not hesitate to say, a greater amount of ignorance than any other allied to the medical profession. The egotism of this class is not less remarkable than their ignorance. Each has promulgated his own views as original discoveries, and all are

in opposition the one to the other,—a pretty sure criterion of their merits individually. Discreditable though it be it is nevertheless true, that many books have been written by such parties with the intention of mystifying and concealing their modes of treatment, instead of elucidating them. Others have recommended a kind of treatment very different to that which they themselves followed. It suited them to have a book on the subject, but not to divulge the secret by which they worked. About the theory of the voice, and the essential nature of Stammering, things of which they knew little or nothing, they were abundantly loquacious, but, concerning their own treatment, certain allusions to fees were the most significant elucidations that could be advanced. Thus much for the Elocutionists, and now of myself.

Probably, with two exceptions, (Mr. Yearsley in this country, and M. Colombat in France,) no man ever possessed the opportunities of investigating the nature and causes of Stammering, to such an extent, as myself, and I

will venture to affirm none ever wrote upon the subject so disinterestedly, and so free and unshackled by motives of professional aggrandizement. My incognito is one voucher for this statement, and I flatter myself that the contents of my book will be found to be another.

THE AUTHOR.

# SECTION I.

## GENERAL REMARKS ON STAMMERING.

STAMMERING may be defined as an impediment to the faculty of Speech, generally of a spasmodic character, depending on functional derangement, which interferes with the direct influence of the will over the organs of voice and articulation.

There are few disorders in which so many contrarieties exist, and where there are such difficulties in the way of simplification, as in this. The kinds of impediment and the modes in which they are affected, either in the way of aggravation or diminution, by various agencies, are as different as the mental constitutions of the individuals in which they occur; and, in all probability, the one is, in a great measure, dependent on the other.

Thus there are some stammerers who are able to talk quite freely at certain times, the temporary freedom from impediment not having any assignable cause; there are others in whom the affection remains stationary for years without manifesting any notable increase or diminution in severity; and there is yet another class, in whom numerous causes, such as change of weather, hunger, an east, or north-east wind, and cold, occasion continual changes in the state of the impediment. Some stammerers, indeed the majority, have greater command over

the voice after a full meal and a glass of wine than at other times, but there are a few who are never so severely baulked as when the stomach is loaded. Some stammerers, when elevated by wine or intoxicating drinks, do not stammer at all, while, in others, drinking to any excess gives tenfold severity to the disorder. In many cases, being in a passion stops the speech of stammerers altogether, but there are some in which it causes it to flow without impediment. Some stammer incessantly before strangers, whose defect is scarcely discernible among their friends; on the other hand, there are those who speak fluently before strangers, and stammer severely to their immediate friends. In most cases, conversing with a person of higher rank than themselves renders the impediment more troublesome, but sometimes it has a directly contrary effect. I have known of one soldier who could control the difficulty at all times, except when required to give the word of command, and of another whose stammer disappeared, entirely, as soon as he mounted his horse and headed his troop for duty; both of them were of nearly equal rank. Stammerers can generally repeat anything after another person, and those who know them, anticipating what they are about to say, often assist them in this manner, but cases occur in which even this is the cause of increased confusion and difficulty. With some, the impediment is almost confined to particular letters, and the stammerer can diminish the difficulty by synonymising as he proceeds, and substituting other words for those which would give him trouble; in others, however, the difficulty extends to almost every sound. Some, again, stammer constantly at the same letters, while there are quite as many who sometimes stammer on words which, at other times, they can speak with perfect freedom. Generally, stammering occurs at the consonants, but occasionally it takes place quite as severely at the vowel sounds.

The circumstances which can be most universally asserted as true of stammering are, that it is increased by whatever has a debilitating influence on the mind and body, and diminished by all moral or physical effects that conduce to health and mental assurance. Generally speaking, long continued wet weather, or east winds, sudden atmospheric changes, (to which stammerers are peculiarly sensitive), the presence of strangers or superiors, irriration, timidity and hurry, all aggravate the impediment.

The classification of the different kinds or modifications of stammering, most accordant with the varied phenomena of the disorder, is that of Mr. Yearsley, which, as it is drawn from a large number of cases, is well worth attention. He divides it into the following forms:—

"Respiratory, as affecting the pulmonary organs, leaving the throat, tongue, and lips free from difficulty.

"Guttural or laryngeal, affecting the vowels and guttural sounds.

"Lingual, implicating the lingual letters t, r, l, &c., and causing a palpable convulsive action of the tongue, sometimes receding, sometimes protruding, through the teeth and lips.

"Labial, in which words commencing with p, m, f, &c., are convulsively reiterated, or the lips appear glued together.

"Facial, in which twitches and contortions of the face occur.

"Choreal, in which irregular movements of the limbs or the whole frame are observed.

"Compound or mixed, in which these varieties run one into the other, and are combined in various ways.

"The facial and choreal are rarely, if ever, seen unaccompanied by the respiratory stammer."

Of the various causes of stammering, imitation is by far the most frequently mentioned by patients themselves. There are comparatively few cases in which there are not some grounds for referring the infirmity to this source. On this account it is hazardous to expose a young child to the example of a stammering person, especially at the age when speech is first practised, and when the proper mode of speaking has not been confirmed by habit. Still it does not follow that children thus exposed shall inevitably become stammerers; there are many cases to the contrary, in which a stammering parent has a large family, none of whom hesitate. It is, perhaps, even more dangerous to have one stammering child among other children, particularly when the one affected is the eldest. I have seen instances in which all the children of a family had copied the impediment in this manner.

Fear and confusion are frequently, and with justice, set down as causes of stammering. Many children begin to stammer by hesitating before persons who are accustomed to punish them, and whom they hold in dread. In some instances the defect is referred to the children copying the foolish mode in which they are frequently talked to when young, that is, by the repetition many times over of the first syllable of such words as papa and mamma.

Stammering sometimes happens after, and is, probably, excited by, the diseases incidental to childhood, particularly

scarlatina, measles, dentition, cerebral affections, hooping cough, and fevers.

I have seen cases in which there appeared every reason to believe that the disorder was caused and aggravated by enlarged tonsils. This seemed to be the case from the two affections arising and proceeding together, and from the beneficial effect produced on the impediment by the removal of the guttural enlargements. Certain it is, that when enlarged tonsils co-exist with stammer, they render it worse by grafting thick and imperfect speech upon the original impediment. Some cases of stammering are greatly aggravated by the loss of teeth; as an instance, I may mention a case where three of the upper front teeth were out, and where the impediment occurred almost solely at words beginning with f or th. Here the difficulty was obviously increased by the absence of the teeth.

Stammerers use the tongue much more, and with greater force, than other persons, and its large size must not be considered as a cause of the defect, but rather as the effect of much exercise, in developing the lingual muscles in an increased degree.

Stammering has generally been considered an hereditary affection, and probably it is so in some instances; but the fact that it is so readily contracted by imitation, makes it a question whether in many cases where parents and children have both stammered, the imitative faculty ought not to be looked on as the cause, rather than any constitutional predisposition transmitted from one generation to another. The cases most in favour of hereditary transmission, are those in which it exists in some collateral branches of the family, who have had no communication with the children affected, and where there was no suspicion of imitation from other sources. It must be remarked,

that children who stammer, generally talk freely at first; about three or four years old being the usual time for the first manifestation of impediment.

One striking peculiarity has attracted the attention of nearly all who have written upon the subject, namely, the comparative infrequency of stammering among females. The best accounts make it appear that in a large collection of cases, the number of females amounts to but little more than five per cent. Various unsatisfactory attempts have been made to explain this anomaly. It is advanced by Mr. Edwin Lee, that women have a finer organisation of the parts concerned in speech, a quicker apprehension, and that they think more rapidly than men; and hence their articulation excels in ease, fluency, and volubility. He quotes the following complimentary effusion from Rousseau, as affording a rational explanation why stammering should be rare, and other nervous affections common, among females.

"Girls have the organs of speech more supple and flexible than boys, they speak sooner and easier, and women speak more agreeably than men. They are accused of speaking more; such ought to be the case, and I would willingly convert this reproach into praise. The eyes and mouth have in them the same mobility. Always occupied in pleasing; observing with the most persevering attention everything which passes around them, always expert to profit by their advantages, and reduced by the state of our society and manners to shine only by singing, dancing, but especially by conversation, they give themselves up to these exercises with ardour, and excel in them more than men. The whole nervous system is also more developed in them; the impressions they receive are more powerful and multiplied, and hence they have a greater number of sensations and internal feelings to make known: anxious to penetrate the secrets of men,

and to ascertain the state of their hearts, speech is for them the most useful instrument, and the most indispensable to their happiness."

This offers an ingenious hypothesis, and is ably supported by Mr. Lee. Taken all in all, it is perhaps the best that can at present be offered. Still it is not altogether satisfying, and appears irreconcilable with some of the facts of the case. If comparative exemption from stammering arise from the greater mobility and flexibility of the organs of speech in girls, how does it happen, that, in old age, when these qualities are much diminished, stammering in both sexes invariably lessens in a great degree, or disappears entirely? Stammering at fifty years of age is exceedingly rare, and I believe it never continues with any severity long after that period. Another circumstance which militates against this view, is the greater prevalence of chorea among girls than among boys. If the infrequency of stammering in women depended on a greater command over the muscles of voice and speech possessed by the female sex, we might suppose that the same power, and the same kind of exemption, would extend to all the voluntary muscles. Indeed, the power of command does so, to as great an extent as in the case of the vocal organs. Thus, in dancing, which Rousseau instances, in graceful modes of acting, and in power over the expression of the face, and the whole body, women are far superior to men. Now, chorea bears very nearly the same relation to the movements of the whole body, as stammering does to the movements of the parts concerned in speech; and if the rarity of stammering were attributable to the cause assigned by Mr. Lee, we should by a parity of reasoning expect chorea to be also a rare disease among females; whereas, the direct contrary is the case, and furnishes us with a corollarative argument against Mr. Lee's explanation.

From some unknown cause, stammering and chorea, though bearing a great resemblance in their essential features, are the one confined almost to the male, the other occurring chiefly in the female sex. The one disorder would almost seem to be the representative of the other in the two sexes. It is also remarkable that one of these diseases, chorea, generally disappears spontaneously at the time of puberty; and stammering, at the period when the animal passions begin to decline. It is possible that sex has a more intimate connection with both chorea and stammering than has hitherto been imagined.

The affection of the voice, which occurs in the course of many disorders, has been compared to stammering, but in none of them are the distinctive traits which mark the impediment preserved with any exactness. In all of them, with a few rare exceptions, it is a faltering of the voice of a passive kind, extending over all words alike; rather than an active obstruction at certain points only, in which the words spoken in the intervals between the impediments are generally delivered perfect. The state of the voice alluded to, happens in apoplexy, where it is an important premonitory sign of the disease; a short time before, and a considerable time after the fit, in many cases of epilepsy; throughout the course of delirium tremens and paralysis agitans; in severe intoxication; in many fevers, particularly the nervous, and in the faltering speech of old age.

## SECTION II.

### THEORIES OF THE ESSENTIAL NATURE OF STAMMERING.

It would fill a volume to enter upon the various theoretic opinions which have been advanced concerning this affection. The majority of them, emanating from professors of elocution, have had no pretensions whatever to a sound physiological basis, while many have been perfectly absurd and inconsistent, both with the known facts of the malady itself, and the healthy action of the organs of voice and articulation. With many of these writers the attempted definitions of the nature of stammering have consisted more of vague hints and surmises, than any tangible propositions that could be seized on for the purpose of proof or disproof.

Passing from these to strictly professional writers, the most generally received theory of stammering is, probably, that propounded by Dr. Arnott, in his Elements of Physics. He believed stammering to proceed from spasmodic closure of the glottis during the attempt to articulate, and compared a stammerer attempting to speak, to the pouring of liquid from a bottle with a narrow neck, when it either comes in jets or does not come at all. This ingenious idea is supported by the evidence of increased action in the larynx, and by the interruption caused to the respiration. The fact that stammerers can sing, was

explained by the open state of the glottis during singing, and this was advanced as a strong support to Dr. Arnott's view of the nature of the disorder.

The following circumstances can be adduced in proof of the incorrectness of this theory. In the first place, singing among stammerers, which appears at a first view so convincing, can be better explained in a different manner, chiefly by the power of measure, the slow pronounciation of the words of a song, and the soft manner of passing over the harsh consonantal sounds. In some stammerers, vowel sounds are freely pronounced, the impediment consisting in an inability to proceed from a vowel sound to the pronunciation of a consonant. Thus, in saying "a man, a bird," there are many stammerers who can produce the sound of "a" (in which according to Dr. Arnott the larynx is open), but cannot with the utmost endeavour put the lips, at once, in the position required for the formation of "m" or "b." Here the lips are palpably the parts at fault and not the larynx; the sound of a, a, a, a, can be continued without interruption till the breath is exhausted. There is also occasionally seen another kind of stammering, in which the difficulty consists in the pronunciation of labial letters; but here, unlike the former case, the lips can be closed as in forming m or b, and no sound is produced, because there is a temporary impossibility to part the lips; still during the effort the breath issues forcibly from the nostrils. In the first, the individual struggles with the mouth wide open, and a continuous vowel sound issuing from the larynx, but there exists at the time an impossibility of combining it with various other sounds. In the second, the mouth is closed; but as a full stream of breath passes from the nostrils, the larynx must be open as in the former case. In neither of these instances could the larynx by any possibility have been closed; so that these facts are directly

opposed to the supposition that closure of the larynx is the essential cause of stammering.

If Dr. Arnott's theory were correct, we might, *a priori*, suppose that, as the female larynx is much smaller in calibre than the male, the proportion being nearly as two to three, that women would be more subject to spasmodic shutting of the glottis than men, and, consequently, more liable to stammering; whereas we have seen that the contrary is the fact, stammering being, comparatively, a rare affection among females.

In the first volume of his justly-celebrated work, Dr. Arnott held another opinion of the nature of stammering, namely, that it depended on a want of association between the organs of voice and speech. It was in the second volume that the theory of referring the disorder to spasmodic stricture of the glottis was first given: but I believe it is now true that Dr. Arnott has himself relinquished it as not being in accordance with all the facts connected with the subject.

Another theory, which can be supported by much plausible argument, supposes that stammering proceeds from a collapsed state of the lungs, or, at all events, from their being so emptied of air as not to afford a sufficient supply to keep up the vibration of the vocal chords. There are, as I have elsewhere observed, cases of stammering in which the state of the respiration seems to be an important complication, if not the cause, of the disorder, but these are comparatively few in number. The breathing, it is true, is disordered in nearly every case, but it is rather from a want of management of the organs than from their being in a state approaching to collapse. Anything like the general application of this theory can easily be shown to be impossible.

It is most extraordinary how small a quantity of air is sufficient to produce a full volume of sound in the larynx. Witness the great power of dwelling on a single sound exhibited by accomplished singers in the efforts termed *sostinuto*. At the end of these lengthened feats, the lungs are as completely exhausted as it is possible for them to be, yet the voice preserves its richness to the end.

This is strongly opposed to the view that would consider want of air in the lungs the cause of stammering. A still more cogent objection lies in the well-known fact that stammerers are able to sing, and many of them can perform difficult cadences in singing, which require a far greater exercise of the lungs than ordinary conversation.

A stammerer, in his broken efforts to articulate, also expends more breath, and is more exhausted, than a finished orator would be in an equal space of time. The most accomplished speakers know how to economise the air of the lungs to such an extent, that with them it does not pass out in a fuller stream during the loudest exertions of the voice, than in excited conversation. As a proof of this, Thelwall was accustomed to adduce the following experiment in his lectures on elocution. He would pronounce the line from the Address of Satan,

"Awake, arise, or be for ever fallen!"

with tremendous energy: the words "awake, arise," as he uttered them, would seem to require a most powerful expiration, but, while delivering them at the utmost pitch of his voice, he held a thin piece of silk suspended about an inch from his mouth, and so small a quantity of breath issued during the effort, that the silk remained, to all appearance, motionless.

Another line of argument of equal force against this theory may be drawn from the circumstances adduced in opposition to the views of Dr. Arnott, especially from the fact that some stammerers during the fruitless attempts to speak have a full stream of air passing from the chest through the nostrils.

One of the most equivocal of the terms which have been applied to stammering is that it is "a nervous affection." To say this is but to substitute one kind of ignorance for another, unless we define in what way the nerves are affected. A key to the difficulty, could it be found, would probably, besides stammering, elucidate in great measure, the nature of chorea, epilepsy, and many other nervous disorders attended by muscular spasm. It has been said that the essential feature of stammering is a want of accordance between the brain and the organs of speech. This may appear satisfactory, but it has in reality little meaning. Confining ourselves as much as possible to the physiology and anatomy of the nervous system, I believe we may explain many of the heterogeneous symptoms of this affection, according to the most received laws of nervous action, and arrive much nearer the solution of the difficulty than has hitherto been done.

Let us first briefly consider the manner in which voluntary muscular motion is produced, and the connection between the mind and the organs of motion, and then proceed to some of the causes through which motions, that are naturally voluntary and regular, become involuntary and irregular.

The nearest approach to a perfect theory of the mode in which muscular motion is produced by the contractions and relaxations of muscles, and the action of motor nerves, is that which considers the nervous fibrils com-

posing the substance of nerves, as insulated threads or conductors of different lengths, one end of which are in connection with muscular fibres, the other terminating in the brain. The ultimate filaments of nerves are insulated, because, although lying side by side, they do not communicate either anatomically, by union with, or division from, each other; or, physiologically, by the transference of an active state of one filament to another, on account of their contiguity. This is the case throughout their whole length, from the centre in the brain to the periphery consisting of the various parts to which nerves are distributed. The connection between the mind itself and the terminal fibres in the brain, has been illustrated by a very beautiful metaphor. These fibres have been considered as spread out in the brain to receive the impressions of the will, like the keys of the pianoforte to the touch of the performer. The mind wills to effect a certain movement, and straightway any single group, or any combination of the nervous fibres which is required, receives a motor impulse, and this is instantaneously communicated to the muscles under the control of the nervous conductors set in action. The impulse of the will upon the cerebral extremities of the nerves, the transmission of nervous power from one extremity to the other, and the appropriate muscular actions, follow with such rapidity, that motion is effected under natural circumstances just as perfectly as though the mind was present in each muscular fibre, instead of being, as it is, seated in the brain, and using the innumerable nervous fibrils as messengers conveying and enforcing its volition in the most distant parts of the body.

This reciprocal action of the mind, nerves, and muscles, nowhere produces more extraordinary effects than are manifested in the production of voice and speech. During the gradual development of the faculty of speech, the

mind is busily employed in learning to associate the different movements with different sounds, till at length, by experience, the control of the complex apparatus of the vocal organs becomes, under ordinary circumstances, complete and perfect. For the production even of simple sounds, it is necessary that many muscles should be set in motion with exactly the requisite force, and in proper sequence; while in some of the more complicated exercises of the vocal organs, as fluent speaking, or singing, the variability and rapidity of the movements required are quite incalculable. They may be compared to the evolutions of a first-rate performer playing a difficult piece of music on the pianoforte, but even here the comparison falls far short, as the movements necessary for perfect voice and speech are more numerous, and are executed by parts of infinitely greater delicacy.

The motor nerves supplying the muscles of the vocal organs are—the portia dura of the seventh pair distributed to the lips, the ninth supplying the tongue, the pharyngeal branches of the eighth pair for the supply of the pharynx and soft palate, and the laryngeal branches of the eighth pair going to the larynx. In order to produce normal speech, each of these nerves and their individual parts must fulfil their functions with exactness, and two of them, the facial and laryngeal, have also another office to fulfil, being employed in the movements of respiration. These respective nerves must lie in the cerebral centre, with each set of fibres ready to receive from the will, and transmit to the different muscles with which they are in connection, the necessary motor force for the production of the movements of speech. Now it is known from numerous phenomena both of health and disease, that it sometimes occurs that, at certain points, there exists an impossibility so to isolate the will as to transmit motor power along individual fibres, or sets of

fibres alone, without implicating other parts of, it may be, the same nerve, or even of another. Thus in the consensual movements, as they are termed, it is impossible to move the muscles of one eye or one ear, without moving those of the opposite side. It is also difficult to divide the actions of the flexor and extensor muscles of the fingers, so as to bend one or two fingers, and straighten the rest. These kind of instances might be increased, but in chorea we have an example of a different kind, bearing equally upon the subject. A choreal patient has a constant impulse to move some set of muscles or other in the most odd and unreasonable manner. There is also a want of control over the emission of voluntary motor power to the muscles, which in some cases affects them generally, in others is limited to a single set. When volition is excited in chorea, another singular phenomenon becomes evident. If the patient desires to put his hand to his mouth, or to place his hand or foot in any particular spot, he is unable to perform the necessary act with any precision. Some invisible power, apparently derisive of his will, seems to pull and tug his limbs in contrary directions at the same time, and jerks them hither and thither till at length his object is effected in the most awkward manner. So, likewise, in walking, the feet cannot be brought regularly to the ground in the usual mode; the evil influence drags one up too high, the other too low, and short or long steps are taken without the power of controlling them.

This leads me to my view of stammering, which is that volition is, as it were, dispersed at the point where it excites the motor fibres, so that it excites a large number of them, or a different series than would be proper for the effect desired. As a consequence of this dispersion, other muscles contract besides those which are necessary, and by their contrary action put a stop to articulation, or

prevent it for a time. An increase of the effort to speak usually adds to the severity of the impediment, and puts a still larger number of muscles in action, until, at length, the right chords happening to be struck, the stream of language flows on, till overtaken by a fresh clog of a similar description.

Sometimes, in the attempt to speak, the misdirection of motor influence is not confined to the wrong muscles of articulation, but extends to other muscles in no way connected with them. There are cases of stammering in which the muscles of the eye are contracted during the effort to speak, so as to occasion strabismus. Other stammerers have a nodding motion of the head, or a jerking of the arms or legs, and some exhibit motions of the whole body, similar to chorea of the very worst kind. I have seen cases in which, besides great distortions of countenance, the body was so writhed, that the head was bowed down as low as the knees, at each attempt to articulate.

It is a curious fact, and seems corroborative of these views of the dispersion or overflow of motor power, that some stammerers, in the attempt to speak, produce involuntarily different sounds to those they intend. I have known instances in which every difficult word was preceded or accompanied by a loud guttural howl, and violent contortions of the muscles of the face and neck.

Stammering frequently exists in combination with chorea, the two disorders having appeared at the same time, and running the same course. Chorea and stammering bear a close and interesting analogy to each other. Chorea has been, not inaptly, called an *insanity* of the voluntary muscles; the term is quite as applicable to the muscles of speech in stammering. The only marked

difference between them is, that in chorea the spasmodic motions are continually present, except in sleep, whilst in stammering they only come on during the efforts to speak; but in chorea, as in stammering, any motor effort brings other muscles into action besides those which were intended by the will. On many other points both are strikingly alike; and nearly all the causes which aggravate stammering have a similar effect on chorea.

In natural speaking, the transitions from a state of contraction to relaxation takes place with great rapidity, but in many cases of stammering where contraction has once affected a muscle, it cannot be relaxed at the proper time. The motor effort which should be transferred with the speed of lightning to other muscles, that they may act in due order, remains fixed in those first contracted. The lips, for instance, are often compressed to sound the labial letters, but it becomes impossible to open them, and at the same time continue the motions required to complete the sounds. It must be observed that it is not the mere separation of the lips that is difficult; this could be done in a moment if the attempt to speak were relinquished; it is the combination of the motion of the lips with the action of the larynx, in producing the voice, that causes the obstacle. If volition be removed from the laryngeal nerves, the lips may be moved through the agency of the facial nerve in any direction. A further illustration of this may be given. A stammerer is able, as Sir Charles Bell remarked, to whisper without any hesitation whatever. Here volition has chiefly to deal with two nerves instead of three, as in common talking. There is no action of the glottis, so that the laryngeal nerves are quite passive in whispering, which is performed wholly by the throat, mouth, and lips, under the guidance of the lingual, pharyngeal, and facial nerves. Directly, however, he begins to use the larynx, and thus adds voice to the

articulatory motions of whispering, the impediment appears in full force, the failure lying, as I believe, in the attempt to combine the action of all the vocal nerves. Whistling is another instance of the organs of articulation being in action without any effort of vocalisation. Here the sound is caused by the vibrations of the lips, and the modulations chiefly by the tongue. This I conceive to be the reason why stammerers can whistle as well as other persons.

In general, the contrary motions are so varied and mixed as to make it difficult to give a correct classification. I believe, however, that there are, occasionally, cases in which the impediment is almost entirely confined to the irregular function of one of the vocal nerves, the others acting promptly and precisely; that is, that in some cases any sound, requiring the use of the tongue, brings on the stoppage; in others the lips are the refractory organs; and, sometimes, the difficulty occurs during the action of the larynx in producing the vowel sounds. I have known one interesting case in which the stammer was transferred at considerable intervals, from one set of organs to another. Frequently the patient I refer to, a lady, would suffer from stammering at the labial letters for a month or more, when that form would leave her suddenly, without any evident reason, for some time, and lingual sounds, which had been spoken freely before, would then cause the impediment. This kind of stammer is rare, but purely intermittent cases are more frequent, in which patients, who at times stammer badly, are free from impediment for some days or weeks together.

Stammering, whatever be its cause, must be considered essentially a perversion of voluntary, not of involuntary motion. The spasmodic action never appears except when the will to speak is exercised, and always ceases

immediately the voluntary effort to speak is relinquished. Magendie entertained erroneous views on this subject.* He considered that "Some of the muscles which serve for articulation are subject to the will; as, those of the lips and cheeks, those which carry the point of the tongue forwards and upwards, to protrude it out of the mouth, and those which draw it back: while the other muscles of the tongue, those which move its root upwards, downwards, or backwards, the muscles of the soft palate, those of the pharynx, and of the larynx, are only incompletely under the influence of volition." The facts connected with deglutition, which prove it to be an involuntary act, are cited by Magendie in proof of his views; but the two acts, deglutition and articulation, are, however, by no means parallel. Deglutition is, under many circumstances, performed involuntarily, there can be no doubt: the presence of the morsel of food at the top of the pharynx, excites the movements of swallowing, and it may even be occasioned in animals after the removal of the brain. A child can swallow immediately after birth. I have found the fauces contract if the finger be placed in the infant's mouth before the separation of the umbilical cord. The act is also performed as perfectly the first time as at any other whatever. No education is required; but, on the contrary, education of the muscles of deglutition, for other functions, confers in some degree the power of controlling by the will the movements of deglutition itself. These may be termed the chief characteristics of the involuntary movements.

The function of speech is different in almost every essential point. It is acquired gradually, and by education. We possess a perfect control over its exercise, and can commence or stop the articulatory movements at any point.

* Dict. de Méd. et Chirurg. Pratiques art Bégaiement.

The statements made with respect to the movements of the tongue are likewise incorrect. The tongue is as completely obedient to the will as most of the other sets of muscles wholly voluntary. The reason the tongue cannot be moved about, so as to show the throat and parts, when a patient is directed to do so, does not depend, as Magendie infers, on its being in part withdrawn from the influence of the will, but on other circumstances, such as affect any of the voluntary muscles. Let any one attempt to move the tongue, and it can be done in any direction whatever, while the mouth is closed; it is only when the mouth is wide open that uncertainty in its movements takes place. The want of its perfect control depends on the open state of the mouth; the two motions, that of opening the mouth, and directing the tongue, cannot be performed easily together, because it is a combination seldom required, and therefore not practised. The awkwardness of the tongue, under such circumstances, is not greater than any perfectly new movement of the hand or foot would prove.

The collateral support to his views, advanced by Magendie, is equally unsatisfactory. The fact that gargarisation, spitting, and the movements of the larynx and other parts in speech, all take place when we will them without our "knowing" what movements take place, or being cognizant of anything save the will and the effect produced, does not bear in the least on the question of whether the movements in these acts are voluntary or involuntary. It is not by *knowing* what muscles we move that we come to perform difficult muscular evolutions. We gain the ability by the gradual association of certain movements with certain efforts of volition, and our experience of the effects produced. In moving the hand or foot, or any other part of the body, the motions of which are voluntary, our sensations of

what is going on does not in the least inform us what muscles are set in action; it is precisely the same with the larynx and the organs of speech, but the movements of the hand or larynx are not the less voluntary on this account.

The error has probably originated in the fact of the tongue, and, indeed, the other parts of the articulatory organs, as the lips, &c., having an involuntary as well as a voluntary function to perform, and from the two being confounded together. Both deglutition, in which the base of the tongue is concerned, and natural respiration, in which the lips and some other parts concerned in speech are moved, are, in a great measure, involuntary acts.

What has been advanced, by way of physiological explanation of the nature of stammering, may thus be summed up:—

I. There appears to be a want of harmony of action between the will, the nerves distributed to the organs of voice and speech, and the muscles belonging to these organs.

II. The nerves of speech are the labial branches of the seventh pair, the ninth or lingual nerve, and the pharyngeal and laryngeal branches of the eighth, or par vagum.

III. There is, probably, a dispersion of the motor influence at the points, when the motor fibres of the nerves are excited; in other words, a difficulty of so insulating the motor power that it shall be transmitted to the proper muscles in proper order, and to these only. This difficulty is increased, by volition having three different

nerves to play upon at the same time. It has been shown that, in whispering, in which two nerves are chiefly in action, the muscles can be controlled readily, in cases of stammering, when the management of all the nerves is impossible.

IV. In consequence of the dispersion of motor influence, other muscles, belonging to the organs of voice and speech, are set in action, besides those which are necessary; and their contrary efforts interrupt those articulatory movements intended by the will.

V. Sometimes the difficulty of speaking is caused by the want of power to transfer motor force from one muscle, or set of muscles, to others; so that only the commencement of words, or sounds, can be formed. Several efforts of a similar kind are made one after another, before the whole word can be spoken. When this exists alone, it constitutes the balbutient variety of impediment.

VI. In some cases, the dispersion of motor power, and the continued effort of volition produces spasmodic action in other muscles besides those of voice and speech. In this respect, their exists a very close analogy between stammering, and the irregular motions excited in chorea by any effort of volition.

VII. Lastly, stammering, though apparently involuntary, is essentially an aberration of voluntary, not of involuntary motion.

## SECTION III.

### MEDICAL TREATMENT OF STAMMERING.

The majority of stammerers are delicate in constitution and of excitable nervous temperament. Of a large family, where one or two have this affection, it will generally be found that the stammerers are the most sickly children. In many cases the stammering makes its appearance during convalescence, from various disorders which occasion considerable debility, particularly the exanthematous fevers. It is remarked by stammerers that the impediment, in its variations, follows the state of their health with the utmost exactness, they being able to speak much better on days when they feel strong, than when anything has occurred to derange their health.

These latter circumstances render it advisable that at least during the application of any other means to remedy the disorder, such medicinal measures should be resorted to, as improve the general health and give tone to the nervous and muscular systems.

The great similarity between this disorder and chorea, would naturally suggest that any plan of treatment successful in the latter would probably prove serviceable in the former. One of the first cases to which the writer paid any especial attention was that of a youth, in which chorea existed as a complication with stammering, and who became a patient in St. Thomas's-hospital for the

choreal disorder. In this instance the stammer became much relieved by the treatment which alleviated the chorea.

When there are signs of general debility, a judicious combination of the vegetable and mineral tonics, with means to subdue and remove any irritation that may be present in the system, to evacuate morbid accumulations from the intestines, and to promote the due and healthy secretions in the different parts of the body, are the remedies best adapted for the constitutional treatment of the disorder of the voice. Without these means, in cases where they are proper, no other treatment will prove of permanent service. The patient may be relieved by educational means; but the relief will be but temporary, where any serious constitutional derangement exists in connection with the disorder.

There are occasionally seen cases in which stammering is greatly aggravated by the presence of worms in the intestinal canal. Here the usual anthelmintic medicines and regimen will prove of essential benefit in lessening the severity of the impediment. It is, however, much to be lamented that any increase in the disorder, in the first place dependent on sources such as this, is exceedingly prone to acquire from habit an independent existence, and continue after the cause from whence it proceeded has been removed. Though I have witnessed several instances in which the successful treatment of verminous disorders has afforded material relief in cases of stammering, I have never seen a case of absolute cure of this kind, without the conjoint application of vocal training fitted to regulate and subdue the impediment.

Stammerers are not only, as already said, in many instances sufferers from bad health, but, I believe, they are peculiarly liable to pulmonary diseases. This has been

maintained to be the case to such a formidable extent, that few stammerers reach an advanced age; to this, however, I cannot subscribe to the full extent. In many, and I believe the majority of those affected, the chest is narrowed, and the breath so short, that a quick walk up hill, or against the wind, will exhaust them much more than a healthy person. It is on these accounts that those cases which have been termed respiratory stammering, where the breathing is greatly affected, and where the circulation in the lungs is impeded at every severe vocal struggle, are deserving of more serious attention than any other variety. In such cases moderate and well-devised gymnastic exercises, if resorted to in early youth, would evidently produce good effects, by promoting the developement of the chest, and the healthy action of the lungs. Such a kind of training would, in addition, be of actual benefit to the hesitation, as in all these cases the want of energy and command over the respiratory organs is severely felt. Singing and declamation, when they can be put in practice, also contribute to strengthen the lungs, but this is effected more particularly by the rhythmic vocal and respiratory exercises recommended in the Section which contains the Educational Treatment of the Disorder.

Occasionally stammering occurs in sanguine habits, where, so far from stimulus of any kind being required, its presence in excess appears to aggravate if not occasion the disorder. In such cases the treatment must be adapted to remove the constitutional derangement by depletory means. In the sixteenth volume of the Medico-Chirurgical Transactions, a very interesting case is recorded by Dr. Bostock, of the cure of stammering, by the use of purgative medicines continued through a long series of years. The patient, a boy between two and three years old, of robust and florid aspect, of a healthy constitution, and of more than ordinary activity of mind and body,

became severely affected with stammering without any assignable cause. He was shown to two or three physicians, and a strong purgative was recommended, more on account of the plethoric habit of the child, than with any specific view. Its effects, however, were so beneficial, as regarded the impediment, that it was repeated several times, and found of equal benefit as at first. The stammer, however, would recur after some time, and would require the exhibition of aperients, which, after the evacuation of morbid matters from the intestinal canal, invariably relieved the vocal impediment. It was, at length, determined to combine diet and regimen with the occasional use of aperients, for the purpose of keeping down the plethora, and maintaining a healthy action of the bowels, which together appeared to be the immediate cause of the stammer. The boy was placed on vegetable diet, and this was so restricted that the plethora was diminished, but not to such an extent as to affect his health and strength By these means the disorder was kept at bay for eight years. When in his twelfth year, and apparently free from impediment, he was sent to a public school, but there the complaint recurred, was unusually obstinate, and required "a long and severe course of purgatives, which, however, was finally successful." From this to the time of Dr. Bostock's writing, when the patient had reached his fifteenth year, the affection was so slight as to be scarcely perceptible.

Calomel and jalap, followed by Epsom salts, were the medicines usually employed. On two or three occasions, slight salivation was unintentionally produced, but it was not observed that this exerted any manifest effect on the impediment.

This appears severe treatment, and such as would, perhaps, not often be submitted to, until other means had failed; but the case seems to have been unusually obsti-

nate, and Dr. Bostock states that, in comparison with the relief afforded to cases of impediment by the instructions of masters, the case related was very favourable, as the boy had none of the mannerism in talking which purely elocutionary means often induces. There can be little doubt that treatment by aperients would be equally favourable in cases strictly of this kind, when there is vitiation of the alvine secretions, and the patient is sufficiently robust and plethoric to bear the means without injury; these are, however, almost the exception to the rule, as stammerers generally do not bear depletion of any kind well.

In the generality of cases requiring medical treatment, to those, in which the disordered speech is combined with general debility, besides the necessary medicines, a generous diet should be recommended. It has been adverted to before, that a hearty meal and a moderate quantity of wine, or indeed any other stimulus, whether moral or physical, which affords temporary strength, will often cause the disappearance of the disorder while this effect continues. On the other hand, hunger powerfully increases the impediment. In a most severe case, which came under my notice, the impediment appeared after the desertion of the child by its parents, and while kept for upwards of a year in a state approaching to starvation. This was, I have little doubt, in a great measure the cause of the disorder. One of the most successful curers of stammering in this country, Mr. John Broster, was accustomed to pay much attention to the diet of his patients, while they remained in his house for the purpose of cure. Though the diet should be good, strict moderation should be observed in the use of all wines and fermented liquors.

In the present Section the moral management of stammering may properly be considered. One of the greatest

misfortunes that can befall a stammerer, is to be placed in frequent communication with a person of uneven or hasty temper, who constantly increases the impediment by hurrying him and manifesting ill-temper and impatience during his attempts to speak. It is sometimes found that stammerers, who under ordinary circumstances hesitate but slightly, will have a master or some person possessing control over them, to whom they will stammer severely on all occasions. As a case in point, I may mention an intelligent youth, an apprentice in a commercial establishment, who could at any time talk with only a trifling impediment to one of the partners of the firm, a man of mild, equable temper; but the difficulty was increased more than doubly, whenever he spoke to his other master, a person of very different temper and manner to the first. I have seen another case in which a boy, who stammered badly, was to all appearance cured, but the difficulty reappeared whenever he addressed his master, and, as a consequence, while other persons noticed his great general improvement, he alone considered him as bad as ever. Stammering is almost invariably rendered worse by attending a public school; those affected attempt to talk in the rapid manner of other boys, and thus increase the impediment. The instance contained in Dr. Bostock's case of a boy being apparently cured of stammering, and suffering a severe relapse on mixing with a large number of other boys, is not of uncommon occurrence. From these circumstances it will be evident how beneficial it must be to a stammering child to talk chiefly with persons who are aware of, and make every allowance for, the impediment. Those having the management of them should, by a mild and firm manner, encourage them to talk with as little fear and trepidation as possible. *Stammering should invariably be treated not as a fault but as a disease.* No impatience of their infirmity should on any account ever be shown them, or threats of punishment used. Hurry almost

always retards their utterance, as coolness and taking time diminishes the impediment; while, in reality, the latter enables them to deliver a greater number of words in a given time than the utmost exertion or attempt to speak rapidly.

## SECTION IV.

### THE SURGICAL TREATMENT OF STAMMERING.

From the concurrent testimony of those most thoroughly acquainted with the subject, it appears certain that considerable benefit, and even cure, is occasionally effected in stammering by operative measures. Though the failures have, acknowledgedly, been numerous, cures have undoubtedly been effected by the severe and now abandoned operation of Dieffenbach; by the sections of the genio-glossi muscles performed by Velpeau, Amussat, Baudens, and others in France; and by Mr. Yearsley in this country, in excising the uvula and enlarged tonsils.

No one has attempted with any success to point out the particular kind of impediment in which each operation is indicated, and probably it is impossible to do so, as relief or no relief whatever, have followed indiscriminately without any apparent rule, in the same description of cases, from operations entirely the same. Good has also been done in cases presenting similar features by the most dissimilar means. The severity of the operation does not afford any measure of the success to be expected. For instance, Dieffenbach's operation of taking a triangular piece out of the base of the tongue has been performed twice in London; of the termination of the first of these cases I am unaware, but the second I have examined, and found him to be in precisely the same state as

before the operation. On the other hand, I have observed cases in which permanent good was afforded by merely dividing the frenum linguæ a little more deeply than is practised on infants when tongue-bound.

From these premised facts it would appear that it must be by some indirect and secondary action that operations have proved serviceable. It is quite evident that it cannot be by any local effect of the operations on the parts involved, or if it were, from the number of operations which have been performed, some rule of guidance in their selection would long since have been deduced. Looking at the subject in a purely surgical point of view, it is inexplicable why the section of the tongue, of the genio-glossal muscles, or the uvula, should sometimes be of great service, and sometimes of none whatever. If the explanation of the nature of stammering offered in the second part of this treatise be accepted, we may obtain at least a probable mode in which operations can affect an irregular action of the organs of speech. If what has been said about the disturbance of the co-ordinate movements natural to the exercise of the motor branches of the 7th, 8th, and 9th pairs of nerves be true, and that stammering is really a disturbance of the functions of these nerves, exhibited in the abnormal action of the muscles over which they preside,—then are there many circumstances, which offer a key to the manner in which the occasional cure of stammering occurs, to be found both in stammering itself, and in other morbid and natural peculiarities of the nervous and muscular systems. Supposing stammering to be caused by the irregular excitation of certain muscles by the nerves in connection with them, which is the best explanation of chorea and other spasmodic diseases that bear the nearest resemblance to stammering, we might reasonably draw the inference that interruption of any kind to the irregular action would in some cases restore the natural condition; in others be of

little effect; or even aggravate the disorder. In fact, operations might, according to this view, be considered as only a more powerful and prolonged application of an idea started by Serres as a means of relieving stammering. He directed that the patient's arm should be pulled down suddenly by a bystander, when the obstacle to the speech appeared. This or any sudden shock often seems for a brief time to break the morbid chain, and suffer the speech to proceed. By any operation a more decided influence of this kind is exerted, which occasionally restores the harmonious action of the organs of voice and speech.

I believe this is the nearest approach we can make to an explanation of the cure of the disorder by operative means. When any sudden interruption to the connection between the motor nerves and muscles occurs, which is the case, from the pain produced in greater or less degree, by all the operations proposed, I consider this in many instances acts by restoring the healthy balance, and suffering the organs to act for a time in a more natural manner.

There is, however, a strong tendency in the organs of speech to return again to their functional disorder. This, unfortunately, takes place to the full extent in many cases. Still, in all where decided benefit has once been experienced, the return of the diseased state is opposed by the mental confidence which the temporary possibility of speaking freely induces, by the greater care and caution observed in speaking, and by the rapidity with which speaking properly passes into a habit. Every day which operative means can procure of freedom from impediment, gives increased strength to the probability of permanent improvement. In general the chances of cure are greatly enhanced when an operation is followed by vocal discipline and well-regulated management; but it is a matter of positive certainty that some cures are effected by slight

operations alone, without the adoption of any educational means whatever. Nearly eighteen months ago I was witness to an operation performed by Mr. Yearsley, on a young man, named Frederick West, living at No. 1, St. James's-street, St. George's East. The uvula alone was removed, and the patient, who had stammered badly from early childhood, was instaneously relieved, and continues at the present time to speak with perfect fluency, not the slightest vestige of impediment remaining. This case is the most remarkable with which I am acquainted, as the recovery was purely owing to the operation, or influences connected with the operation itself, no rules or educational treatment whatever being resorted to after the removal of the uvula. It should be borne in mind, that I am only contending for the occasional cure of stammering by the knife, and giving what I know to be facts, with the hope of elucidating a confessedly difficult subject.

I am acquainted with the circumstances of another cure of stammering by an operation of an accidental kind. A legal gentleman of Edinburgh, suffering from this defect, met with a fall which severely cut his lower jaw, and from the time of this laceration, much to his surprise and delight, the vocal impediment disappeared altogether. In this singular case the disorder had existed for many years, and various methods of treatment had been tried without effect.

I have already alluded to the traits of resemblance between chorea and stammering, the similarity being more especially marked in those cases of local chorea in which the irregular movements are confined to one limb or part of the body. This kind of chorea has also been known to be cured by accidental injury of the parts affected. An interesting instance is related by Dr. Watson. He states that he knew a gentle

man who was subject in his youth to an involuntary and incessant shake of the head, of a chronic choreal character, but a blister having been applied to the throat, for some disorder of the air-passages, it so interfered with the movements of the head as to render them difficult and painful at the time, and in the end permanently removed them, though he still remained subject to perpetual twitching of the nose. There are some rare instances recorded of the cure of epilepsy by accidental injuries of the head, and recently considerable attention has been drawn to the operations of Velpeau, who is said to have cured this disease by placing ligatures on the temporal and facial arteries. It cannot be supposed that these operations proved benecial by altering the state of the circulation within the head; it is more likely that the simple wound and the ligature produced the effects, and that any part besides the artery might have been tied with a similar result. The probability is that this kind of cure of epilepsy, of chorea, and of stammering, are all reducible to the same law, and admit of an explanation such as the one I have advanced.

Mr. Yearsley contends that his operations for the removal of enlarged tonsils have often cured stammering. Where these glands are of such a size as to interfere with speech in any way, there can be no question about the propriety of their removal, either by surgical or medical treatment. Whether these glands when enlarged are ever the primary cause of stammering, is questionable, but it is extremely likely that, when they co-exist with this disorder, they render it more obstinate, and increase the difficulty of applying educational treatment.

The later operations of Mr. Yearsley have been conducted with reference to his classification of the disorder, quoted in the first Section. In what he terms the guttural

variety of stammering, he removes the uvula, or the tonsils, should the latter exhibit any signs of disease. When the stammer is labial, he inserts a small seton, composed of two or three threads, through the frenum of the lower lip. If the tongue is chiefly concerned in the impediment, he applies a seton of the same kind to the frenum linguæ; and when the larynx is principally affected, he applies moxas, or small blisters, over the pomum adami. This modification of treatment is attended by considerable success. The application of blisters and moxas had previously been recommended by others, but the insertion of small setons I believe to be entirely original, and in many cases of great value. Are not these circumstances corroborative of the opinion I have advanced that certain kinds of stammer may depend on deranged action of one of the nerves, presiding over the articulatory movements? And is it not likely that this kind of local operation, when it is successful, acts by disturbing for a while the morbid action of the affected nerve?

On the whole, the question whether operations are likely to prove beneficial, may be answered, with certain qualifications, in the affirmative. For the reasons already stated, I do not believe that any precise rule for their adoption can be made out, except in the local operations devised by Mr. Yearsley in cases of partial stammer. There can be little doubt that both the local operations of a slight nature upon the lips and frenum, the application of counter-irritation to the larynx, and all the other operations which have been devised, act in the same manner, namely, as already said, by interfering with the old perverted habit, and affording a chance of their taking on a new and regular action. I have heard patients, having undergone an operation, remark that, as long as the parts continued sore, they felt as though a bit and bridle had been applied, which forced them to speak slower, and appeared to render the articulation

more manageable. In the removal of the uvula, it is remarkable how much relief is afforded to the spasmodic action of the chest in cases where the respiration is much affected. There is no evidence whatever to prove that the severer kinds of operations are more serviceable than those which are void of all risk, and unattended by any considerable pain in the performance. The chances of cure by operative means are also so uncertain, that no one can be justified in recommending, or performing, any operations but those of the most simple kind, and which entail no present risk, or future inconvenience, on patients who choose to submit to them.

The cases for which operations are most adapted are those in which the various educational means have been tried, and found inefficacious. Most frequently this will happen from some fault in the patient, rather than from the failure of a proper method of training in removing the impediment. Some stammerers are of a temperament so excitable, that they experience the greatest difficulty in conforming to any rule adapted to correct their vicious utterance; or, if they do receive benefit in this way, it is only while they speak under the superintendence of another person. As soon as they enter general society, or are left to self-guidance, they break through all the restraints of rule, and return to their former state. As in chorea, in which many patients know that, by a strong effort of the will, they may control their eccentric movements, but find the voluntary exertion that would be necessary more distressing than the disorder itself, so among stammerers there are some who seem to prefer the presence and deformity, of their impediment, to the vigilant watchfulness and caution they must exercise to enable them to speak in an even and natural manner.

## SECTION V.

### EDUCATIONAL TREATMENT OF STAMMERING.

To the various rules for keeping the tongue, lips, and palate, in certain positions, which have been at different times recommended for the relief of stammering, I cannot attribute much value. That used empirically by Mad. Leigh, and subsequently adopted, with some modifications, by Malbouche, is the most celebrated, namely, to fix the tip of the tongue against the roof of the mouth, behind the front teeth. This is, without doubt, the most natural position for the tongue to assume at the commencement of speaking, and it gives considerable assistance in pronouncing words commencing with any letters that require this position for the tongue, as n, t, th, and c. Placing foreign bodies in the mouth, as pebbles, or pieces of ivory, which are generally recommended to be kept under the tongue, would serve to elevate it towards the palate; but these have another action, that of tending to interfere with the dis-association between the points of motor power in the brain, and its evolution in the muscles of speech. Sometimes, however, they aggravate rather than calm the disturbance. Itard devised a forked metallic instrument with which to bridle the tongue; but this was found injurious in other respects. It becomes dangerous to keep metallic substances in the mouth long together. I once saw a patient who, as a cure for stammering, was

recommended to keep a leaden bullet in his mouth constantly, which he did, till the lead, by the action of the saliva, passed into the system, and caused a severe attack of true *colica pictonum*.

The success of Mad. Leigh was said to have been great, and I have therefore no doubt but she resorted to other means than merely attending to the position of the tongue. Almost all the reputed systems of cure have had rhythmical instruction mixed up with them, though it has often held a place subordinate to other points of treatment. Still I have no doubt that when cures have been effected under these circumstances, rhythm was the true curative agent.

The pebbles of Demosthenes have generally received the merit of his cure, but it is far more likely that his relief was really attributable to his attentive readings of dramatic verse with Satyrus, in which rhythm was necessarily observed. Simply keeping pebbles under the tongue is found to do little for the cure of stammering in the present day.

The exercise recommended by Dr. Arnott, is that of prefixing a slight sound of *e* French before difficult words; and continuing the sound of the voice from one word to another by this kind of intonation; this may be used, occasionally, with great effect as an adjunct to what I shall hereafter describe as the alliterative method; but, as a radical cure, it is only adapted for slight cases where the impediment is chiefly on the labial letters. To adopt this in all cases is quite impossible, as there are some who stammer most at *e*, or any other vowel sound, and many who do so only occasionally.

Muller proposes a modification of Dr. Arnott's plan, founded on the same views of the cause of the malady.

He conceives a cure might be effected by allowing the patient to practise himself in reading sentences in which all letters which cannot be pronounced with a vocal sound, namely, the explosive consonants b, d, q, p, t, and k, were omitted, and only those consonants included which are susceptible of an accompanying intonation of the voice.*

It would be difficult to construct a number of sentences so as to avoid these letters, which certainly are those at which the majority of stammerers experience the greatest difficulty. In deference to so great an authority, I made an attempt to put his proposal into execution, but found it exceedingly difficult, and withal not so beneficial as other modes of treatment.

In the treatment of stammering by the most effective educational means, the first point which merits attention is the state of the respiration, which, whatever may be the cause, is generally short and irregular. The irregularity may, perhaps, be accounted for by the circumstance that stammerers, when they have the momentary freedom of speech, which is frequent in all but extreme cases, hurry out as many words, and respire as long as possible, till the breath is completely exhausted, when they have to take two or three short spasmodic inspirations and expirations, during which not a word can be got out. This irregularity it is of much consequence to correct. I believe it is best removed by adopting punctuation, in reading and speaking, to the state of the patient's breath. A person with a healthy action of the vocal organs speaks with ease, in obedience to the common punctuation, inspiring gently at each stop, and this, in fact, facilitates the utterance, and preserves the proper relation between the lungs and the voice. But it is necessary to be explained to stammerers, that in their case a different rule

* Muller's Physiology. Translation by Baly.

should be observed. They cannot breathe so long as other persons; neither should they attempt to speak as much in one breath. The following is an example of ordinary stopping, and of the kind of punctuation adapted for stammerers. The one will probably be difficult to a stammerer, the other comparatively easy, if a moderate inspiration be taken at every stop.

"Pauses are not only necessary, in order to enable the speaker to take breath without inconvenience, and hereby preserve the command of his voice, but in order to give the hearer a distinct perception of the construction and meaning of each sentence, and a clear understanding of the whole. An uninterrupted rapidity of utterance is one of the worst faults in elocution. A speaker who has this fault, may be compared to an alarm bell which when once put in motion, clatters on till the weight that moves it is run down."

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Both these specimens of punctuation have been taken from Enfield's speaker, but the punctuation of the second example has been materially, and, as I conceive, beneficially departed from. It is a remarkable fact, considering the authority, that the punctuation of the first quotation is glaringly incorrect; and with regard to those instances in the second example, in which the pause, marked by

a comma, would be irregular in a passage properly punctuated; that difficulty would be obviated, by adopting the suggestion of a little work on elocution by Mr. Pinnock, but little known to the public, in which a pause intituled the half comma was advocated, not as a relief for stammerers, but as a convenient pause for the voice in long passages, the sense of which did not admit of the interposition of the full comma itself. The half comma mark adopted by Mr. Pinnock resembled an acute accent, thickened at the top, or a comma straitened.

The latter example, then is a specimen of the punctuation which a stammerer should use who has been some time under treatment, or where the impediment was not originally very severe. When commencing the cure of a difficult case, the respiratory pauses must be made at shorter intervals than they are here set down.

The principle developed in this kind of exercise should be firmly fixed in the mind of the stammerer, and by carrying it out, in reading and speaking, he may soon bring the respiratory organs into such a condition, that the inspirations shall follow each other with ease and regularity.

This practice, besides its beneficial influence on the impediment, is of service to the lungs themselves, often relieving the pain in the chest which most stammerers experience. The frequency of the respiratory rests must, in the first instance, be adapted to the state of the health and the voice; but when the pupil can proceed with tolerable ease, at short intervals, they may be gradually altered, so as to take in the pronunciation of seven or eight syllables in each breath. When this power is attained, it removes all peculiarity from the mode of speaking, as far as respiration is concerned, and need not be perceived, except by the pupil himself.

In every variety of stammering this management of the lungs is important, though more especially so when an irregular action of the respiratory organs appears to be the chief characteristic of the impediment. In thus applying rhythm to the discipline of the lungs, we are but following the dictates of nature, and carrying out a law implanted in the organs themselves. As an illustration of the actual connection between regular respiration and regular speech, it may be instanced, that some persons who speak fluently at all other times, are affected with stammering under any high excitement which renders the breath gasping and irregular. Another example may be drawn from stammering itself. Some stammerers are able when swimming, to talk without any hesitation whatever. In this exercise the breath is drawn regularly, and, moreover, the influence of rhythm is exerted in the general movements of the body.

Stammerers, like all others subjected to personal defects, generally feel a bashful diffidence when in society, especially among strangers. On this account, and the trepidation and fear it engenders, the impediment is greatly aggravated in a conversation with those of higher rank than themselves, or with whom they are not acquainted; this timidity must exercise a prodigious power over the voice, as comparatively few stammerers feel any hesitation when talking aloud to themselves. Adult stammerers rarely, if ever, stammer, or suffer any inconvenience, when conversing with children, and many lose all traces of the infirmity in their intercourse with persons of inferior rank to themselves. It has also been observed that some stammerers talk freely when blindfolded, a circumstance upon which Itard founded a method of cure, but which proved of only limited application. Stammerers who talk in their sleep are also freed from impediment at that time. I have become acquainted with a singular fact in the history of a stammerer, which bears

upon the point I am considering. The subject of it, a gentleman severely affected at the time, became ill of fever, and during the progress of the disease was attacked with delirium. He continued delirious for three weeks, during all which time he talked a great deal, but without the slightest vestige of stammer. It had frequently been his custom to stammer as badly before his friends as among strangers, and immediately on the return of consciousness, as the fever left him, at his first attempt to speak coherently he stammered, and continued to stammer as badly as ever.

Few among those affected can dare, while pronouncing the few first broken words, to look the party they address in the face. They may be noticed, after having proceeded a little, and gained some assurance, to raise their eyes from the ground; but even then they usually avoid the eye of another person, as they would an evil influence whose glance gave tenfold power to their tormentor. The above is true of by far the great majority of those afflicted; still it must be mentioned that there are a few rare exceptions in which stammerers are so confident and self-possessed, that the presence of strangers proves only a stimulus, which gives them power to shake off for a time all impediment. There are actually some cases of persons who stammer incessantly at home, yet are able to make a long speech, or lecture in public, without exhibiting any signs of hesitation.

The removal of excessive diffidence from the mind of a stammerer is absolutely essential if we would effect a cure. The best means of diminishing it, is to show him that by moderate care and application he may gain much, if not entire power, over the faculty of speech. Immediately he begins to find the impediment diminish, his assurance will increase, and his nervous feelings become less troublesome. The necessity of conquering all false

shame ought to be impressed with great force upon his mind. A stammerer must study to acquire moral courage enough not to be ashamed of his imperfection. It will generally be found, on the contrary, that when in society of any kind, he is accustomed to harass himself before he attempts to speak, with fears of breaking down, and, what is worse, that his manner will provoke the ridicule of his hearers. Every such occurrence as this, and such are continually happening, has a miserably depressing effect upon the mind of a stammerer. He should accustom himself to think on the incalculable injury such mortifications inflict on him, and to steel his mind by the reflection that no human being, however gifted, has a right to triumph over him on account of his failing; and that, least of all, is it wise in him to keep himself silent by shame and pride, and thus add strength by his own apprehensions to the ridicule he holds so much in fear. My advice is, that a stammerer should neither avoid nor court society, but that when by duty or business he is called to mix in it, he should cast aside all fear for the success of his attempts at conversation, and, without intruding himself, say that which his mind prompts, in the best manner his infirmity admits. He may be sure that where he meets one person inclined to ridicule his efforts, there will be two ready to feel for, and assist him. One important thing is, that he ought always to know what he is about to say, so that confusion of mind may not increase the impediment.

When once a stammerer has schooled himself into the habit of talking with unconcern before friends or strangers, he will receive little trouble from the nervousness which generally accompanies the disorder. He should bear, with him on all proper occasions a spirit of boldness when attempting to speak. If a friend or acquaintance be met in the street, the stammerer should not, however he may feel inclined so to do, pass over to the other side, or

avoid meeting his eye, from the dread of being unable to utter a "good morning." A stammerer will find that every ordeal of this kind through which he passes in a proper manner, will have upon his mind the beneficial effects of a victory, while every contrary instance will produce the bad consequences of defeat.

The application of Rhythm, measure, or time, to the management of the voice, is, beyond all other means, the one most beneficial to stammerers, and is the most easily put into operation. It has formed the basis of all the most celebrated secret processes for the cure of vocal impediment, being seldom imparted to any one save under an oath, or solemn promise of secresy. Rhythm was the means employed so successfully by the celebrated Thelwall, and afterwards by Mr. Broster, who both kept it a profound secret. Many others of lesser fame have used this agent conjointly with various remedies of a different nature, and have on this account attributed virtues to other plans, which was due in great measure entirely to this. In the present day, those are the most successful in treating this affection, who best understand this principle, and most effectively carry it into practice. Messrs. Thelwall and Broster have written upon the subject, but in a most enigmatical manner. If any reader has ever perused the glowing annual reports of the wonders effected by the Brosterian system, as it was termed, which undoubtedly did effect a large number of cures, the accounts of which were veiled in most mysterious language, it will be understood in a moment, when the word rhythm is mentioned, that this is the enchanter's wand, the true solution of the Brosterian enigma.

*Methods of applying rhythm in the correction of stammering.*—If the impediment is of a very severe kind, and happening at all words irrespectively, the first step should be to practise the patient in reading and repeating lessons

the words of which are divided into single syllables, and making him comprehend that the object aimed at is to make each syllable represent a certain, equal, space of time, and for all to follow each other at regular intervals—thus—

"The-pro-per,-stu-dy-of,-man-kind,-is-man."

A slight singing intonation should be given to every syllable, and the breath be relieved at each comma. The pupil should be enjoined not to pronounce, even if he feels the ability, more than one syllable at a time, and not to neglect the respiratory pauses at the end of every two syllables.

This kind of preliminary exercise might very properly be termed a division of language into vocal feet and respiratory feet.

To some stammerers this part of the treatment will appear puerile, but for others, easy though it seem, it will prove too difficult.

For the latter class, some auxiliary aids are necessary. To assist in the free pronunciation of the different sounds, they should tap one finger in regular time upon a table, taking as much care as possible to render each tap synchronous with the utterance of each syllable. As soon as this idea is well understood, moving the forefinger backwards and forwards on the thumb, or gently moving the foot, will answer the same end as striking with the finger, and has the advantage of not being noticeable by other persons. It is extraordinary how good an effect a regular muscular motion, however slight, has upon the voice when due attention is given to let the movement and the voice keep time together. Many stammerers, when they have a greater difficulty than usual, strike the air with the

hand, or stamp with the foot involuntarily, to facilitate the pronunciation of the word. The muscular actions which an orator uses are also of real use in promoting the power and activity of the organs of spech.

When an impediment at a certain letter or letters is a prominent feature of the stammer, which is often the case, both at vowels as well as consonants, a modification of the rhythmical exercises is required. The pupil ought first to exercise himself in pronouncing the individual letter or letters, and then practise the repetition of each diffieult letter several times in one breath, observing in every exercise to speak in regular time. As a further remedy, a set of alliterative exercises should be constructed, by forming sentences of several words each beginning with the letter at which the greatest difficulty is experienced, thus taking advantage of—

"Apt alliteration's artful aid."

The following lines also may be quoted for example:—

"An Austrian army awfully arrayed,
Boldly by battery besieged Belgrade,
Cossack commanders cannonading come,
Dealing destruction's devastating doom," &c.

It is in cases requiring treatment of this kind that the plan recommended by Dr. Arnott will prove most serviceable. The prolongation of a vowel sound from the end of one word till the difficulty of the first letter of the next is surmounted, will enable the pupil to acquire facility in this kind of pronunciation sooner than he otherwise could.

When the chief difficulty is felt in commencing a sentence, it may be surmounted by reckoning one, two,

three, or humming over these numerals, and passing from them to the difficult word, taking care when the sentence is entered upon, to speak in the same measured time as when counting. There are few severe stammerers but will find this method available; in fact, the more closely the first exercises are performed, as though it was counting numbers instead of pronouncing syllables, the more likely is the necessary rhythm to be observed.

The patient should engage himself in this manner perseveringly for a short time, being encouraged to introduce the same method into all attempts at conversation. After considerable good has been effected in this way, he must be led gradually on to a mode of utterance, in which, though the principle of rhythm may be as rigidly observed as in the first method, yet no monotonous or disagreeable peculiarity can be observed.

This should be done by lengthening out both the respiratory and vocal feet; an alteration in the first example will afford a specimen, thus—

> 'The proper—study of,—mankind—is man;" or,
> "The proper study,—of mankind is man;"

instead of pronouncing the whole line in one respiratory foot, as is usually done.

Care should always be taken to speak slowly, with moderate loudness; and to keep as calm and collected as possible, so as not to let the voice fall out of rhythm.

Dr. Mason Good relates that one of the worst stutterers he ever knew was the most finished reader of "Paradise Lost" he had ever heard. This was doubtless owing to the introduction of rhythm in his readings of blank verse, and its neglect in ordinary conversation.

There is at the present day a teacher of elocution of some celebrity, who, by the use of rhythm, may be said to have cured an originally severe impediment in himself; but, occasionally, he is thrown off his guard a few moments, during which he stammers at almost every word. A very eminent member of the bar and present House of Commons suffered in early life from stammering, which has been remedied by educational training. He can now speak in a measured manner for hours together without the slightest hesitation; but, should any one interrupt him, by asking a question or otherwise, like the previous case he loses his method of speaking, and for a short time is unable to utter a word.

The common instrument for keeping time, called the metronome, may be used in some cases with advantage during the earlier exercises, at first setting it to keep slow time, and afterwards rendering it quicker as the facility of speech increases. This idea was first taken from the fact, that some stammerers can talk fluently while listening to a piano-forte, or any other musical instrument.

Continued perseverance is required to subdue the impediment. Patients ought not to be content with sudden improvement; they should be thoroughly impressed with the necessity of taking care that no improvement once gained be lost through neglect. It is easy for any person in the secret of the cure of stammering, after a little practice, to take a bad stammerer, and, by putting him in a certain mode of talking, to make an almost miraculous improvement in a few minutes. It is only, however, by the most watchful attention from the pupil, that this can be kept up. If any rule can be affirmed on the subject, it is, that the more quickly a stammerer is relieved by educational means, the less likely is he to become permanently cured; those who are suddenly relieved, being

generally of a vivacious temperament, and prone to flag in the exertion required for a permanent eradication of the evil.

I may instance, as an example, the case of John Tarr, an account of whom appeared in the public prints during the last year, and whose *cure*, after a few minutes' teaching, was vouched for by several medical witnesses to the treatment. There can be no doubt that this boy was temporarily improved, and it shows the power of educational training over the disorder, but it is no less a fact, that the boy himself and his friends are conscious that he now suffers as much from the impediment as he ever did. The average time occupied in effecting a cure in the Institution Orthophonique of Paris, under the guidance of Colombat, is stated to be twenty-five days.

The means of relief should be kept by the stammerer constantly before his mind. In general the dread of the impediment, and the speedy benefit experienced, is sufficient to do this. The trouble of carrying the simple rules into effect is not very great, even to children, especially where they have an opportunity of frequently conversing with some one who understands the subject, from whom they can imbibe the proper method by imitation as well as precept.

When patients are tolerably advanced towards a cure, and indeed long after this may be said to be effected, those who have stammered should continue on the watch against the return of the defect, and take advantage of every opportunity of strengthening themselves in a correct method of speaking. This may be done at any time, while listening to a sermon, or in the theatres, or whenever a practised speaker is met with. An attentive observer of their delivery never fails to perceive the regular and graceful rhythm in which their language flows, and

any one subject to impediment may carry away an useful lesson from their oratorical efforts. Following a speaker thus, rather assists than hinders our comprehension of the subject he is dilating upon.

Though the initiatory exercises appear uncouth, the pupil may be led on in practice till at length the only peculiarity in his style of talking is, that his utterance is extremely regular. The stammerer who is counting (and there are few stammerers who cannot count), and the orator or actor whose delivery is characterised by exact rhetorical grace, are carrying precisely the same law into effect, however humble the one effort may seem by contrast with the other. The first is, so to speak, illustrating the *alphabet* of rhythm, the second its *finished language*. While a good orator is speaking, any one might beat regular time in harmony with his speech. In general he will be found to carry the same regularity into his ordinary conversation. It is to pass over the immense distance between the reckoning of the stammerer and perfect speaking, that rhythm is called into operation, and, when properly applied, no other known means can effect so much for the relief of stammering.

## SECTION VI.

### ON THE INFLUENCE OF RHYTHM.*

By Rhythm is meant the succession of any sound, impulse, or motion, in regular order, and at equal intervals.

*Rythmic Action, one of the Physiological Laws of the Nervous System.*—This is seen most prominently in those phenomena of the respiration and circulation which depend on nervous or muscular action. The regular beating of the heart, under the influence of the nerves, which supply this organ, is the most striking example which can be adduced. Its systole and diastole follow each other, in a certain measure, or rhythm, as long as life and health exist together. So decidedly is rhythm implanted in that part of the nervous system presiding over the heart, that it may be continued for a certain period even after death. If the cardiac nerves in an animal recently killed are irritated, the heart contracts, but not permanently. The movement is of a pulsatory kind as long as it continues, and the dilatations and contractions follow each other with regularity when the heart has been emptied of blood, or even divided from the rest of the body.

The respiratory movements form another great exemplification of the presence of rhythm in the animal

* In this Section Colombat is chiefly followed.

economy. Inspiration and expiration, as far as they are perfectly natural and involuntary, are performed in rhythmical succession. Their greatest regularity occurs in tranquil sleep, and when volition does not interfere in the slightest degree with the movements of the chest. On the other hand, breathing becomes irregular chiefly when the order of the respiratory movements are interfered with by an exercise of the will, or during some strong internal emotion. The regular action of the muscles in walking, running, swimming, and dancing, are minor instances of the presence and effects of a law of rhythm. None of these acts can be performed with ease or propriety except the different series of muscular contractions follow each other in regular time, and when, of course, the same regularity presides over the emission of nervous energy which excites the muscles to action.

*Influence of Rhythm on the general Movements of the Body.*—Much that is extremely interesting can be said on this subject. All muscular movements are performed with greater dexterity and precision when assisted by measure or rhythm. We see this in the unison of effort and increased power which the rhythmic sounds used by sailors gives them, in furling or unfurling the sails, or heaving up the anchor. It is related that the negroes toiling on the sugar plantations, under a burning sun, labour more cheerfully and effectively when their exertions are timed, and their efforts directed, either by their own songs, or the sound of a musical instrument. It is said by Diodorus Siculus and other ancient writers, that Pythagoras discovered the numerical affinity of the gamut, as well as the rhythm of music, when listening to some blacksmiths, whose hammering, struck in unison, produced the octave, fourth, fifth, &c.

In walking, the effects of musical rhythm are very remarkable. Few persons pass music in the street with-

out altering their pace, to suit the measure of the tune. Marshal Saxe noticed that even the monotonous beating of a drum was of great service to soldiers on a forced march. A regiment will march farther and with less fatigue when accompanied by music, than without. The Arabs resort to music to give alacrity to the steps of the wearied and heavily burdened camel; and the circumstance that a regular succession of sounds influences the movements of many animals, accounts, as Colombat believes, for the bells so frequently hung about the necks of mules and horses.

A curious example of the effects of rhythm is furnished by Gretry, who states that when two persons are walking together, the one may by its influence almost command the pace of the other. He says that if you hum an air in an under tone, the time at first in accordance with the walker's pace, his step may be either quickened or decreased according as you almost imperceptibly alter the movement.

The author above quoted mentions another experiment, the accuracy of which Colombat states he has repeatedly proved on his own person; it consists in placing two or three fingers on the radial artery, at the same time humming an air, the measure of which is regulated by the pulsations. After a while, by merely altering the time, the pulse will sensibly accelerate or diminish, accommodating itself to the movement. As an additional proof in favour of the truth of this, we are told by Haller that, on opening a vein, the blood will flow more freely to the sound of any musical instrument. Again, during the performance of lively inspiriting music, the countenance may be observed to assume a heightened colour, the whole body to experience a kind of involuntary tremor, and the pulse, even in many with whom it is usually intermittent, to become perfectly regular.

The influence of rhythm on dancing is remarkable. Rhythm is essential to be observed in every kind of dance, and is found as well in the rude movements of uncivilised nations, as among the most cultivated. Dancing is a most tiresome exercise, unless the measure is given by music; but it is known that delicate persons, whom a slight amount of exercise or a moderate walk would fatigue, are able to dance an hour or two without injury or weariness, on account of the musical rhythm which has animated and regulated their steps. In opera-dancing it is very questionable whether the performers could execute their extraordinary evolutions without the aid of music or rhythm. The same may be said of the rope-dancer, and the performer in the gymnasium or equestrian arena; and it is a remarkable fact, that recently in an exhibition of "Voltigeurs," the tune having been accidentally changed by the band in the course of the performances, and the change occurring at a particular crisis, that the performer himself failed in his leap, and, falling on the stage, consequently met with a very severe injury.

In the latter part of the life of Dugald Stewart, this eminent metaphysician suffered from paralysis, which so affected his speech as to render it almost unintelligible. It is, however, stated that Mr. Broster, by the application of his system, enabled him to read with ease to himself, and so perfectly, as to be understood by a large circle. This is given on the authority of the editor of "Blackwood's Magazine." The only means possessed by Mr. Broster was the application of rhythm, on the same principle as is developed in the preceding Section; hence it becomes an interesting question whether this agent would prove of anything like general benefit in cases of partial paralysis of the vocal organs.

Several interesting cases are related by Colombat, in which there existed involuntary spasmodic movements of

the limbs, of a nature analagous to chorea, which were entirely cured by the application of rhythmic vocal exercises to the cure of stammering, with which the spasmodic disorder coexisted. In one of these the convulsive movements also disappeared whenever the patient played upon the piano-forte, or listened to any musical instrument. Would not these and similar facts show the utility of resorting to musical rhythm, as a method of cure, in many purely nervous diseases? And does not this chapter afford some solution to the almost miraculous effects which have been attributed to music in curing the bite of the tarantula, and other disorders of motion allied by their symptoms to chorea?

*Influence of Rhythm on the Voice and Speech.*—Rhythm appears to be natural to a proper exercise of the vocal organs. All those who are accustomed to speak long together adopt a rhythmical measure. This is especially the case with clergymen, barristers, and actors; it is easy during their oratorical exertions to beat regular time in perfect keeping with their delivery. From having the subject deeply impressed on my mind, through its connection with stammering, I have frequently, when listening, found myself keeping time unconsciously. Those who do not speak in this manner soon become fatigued, while a practised speaker is enabled, through its assistance, to speak for several hours without any great exhaustion.

The first essays of children in speaking are always made in a certain measure or rhythm; and such words as by their repetition naturally fall into rhythm are invariably those which children learn to speak soonest and most easily. The natural sounds produced by infants partake of a rhythmical character even before they have learnt to pronounce words, when they use the organs of voice and articulation without any end, but merely in

obedience to an internal impulse which makes the practice of the first feeble efforts of the faculty of speech a pleasure to the infant mind. There can be no doubt that nature, in thus connecting rhythm with the earliest development of speech, points to the most easy and certain mode of acquiring command over the different parts concerned in its production.

Among rude and untutored races, where language exists in its most simple forms, the law of rhythm exerts a powerful influence, both in the construction of words and syllables and the methods of pronunciation. In many barbarous languages this exists to excess, the accentuation following in such regular time, that when spoken they appear like a kind of chant.

The Romans were aware of the great value of rhythm in speaking. Snch of their orators as found a difficulty in declamation were accompanied in their harangues by a musical instrument, and regulated their speech accordingly. Gracchus, whenever he spoke in public, was accustomed to have a slave by his side, softly blowing the flageolet to incite and equalise his flow of thought and language.

In stammering, the influence of rhythm is extraordinary. Impediment disappears as if by enchantment in singing or declaiming. Stammerers can also generally reckon, repeat the Lord's Prayer, or read the Scriptures without stammering; at all events, even in the most obstinate cases, the impediment is much diminished while thus engaged. The improvement in praying, declaiming, or reckoning, is, without doubt, solely attributable to rhythm. In singing, though rhythm is the chief cause of the increased facility of utterance, there are other accessory aids to the voice, such as the slow pronunciation of the words, and the manner in which the sounds are

prolonged, and one syllable glides into the others. Something, too, must be attributed to the tranquillising effects of the melody upon the mind. The nervous system acts also with greater readiness and precision, and in harmony with the muscular contractions of the organs of speech.

Not only can stammerers sing or chant without impediment, but those nations whose languages and modes of utterance are most rhythmical, appear to be the least liable to stammering. A remarkable fact of this kind has been instanced, namely, that the inhabitants of China, and more particularly of Cochin China, never hesitate when talking their own language, which is very rhythmical, and in which there is a great similarity between different words, both in sound and measure; but natives of both countries have been known to stammer when speaking in foreign tongues. Colombat had an opportunity, in 1839, of witnessing this peculiarity in the son of M. Chaigneau, late consul in Cochin China, who had attained the rank of mandarin in that country, an honour never before conferred on an European. The young man alluded to, who furnished Colombat wtth the following details, was born of a French father and Chinese mother, and spoke from infancy the native languages of both parents. He stammered considerably in the French language, whilst in the Chinese dialect he expressed himself with the greatest facility, and repeated, at Colombat's request, a few sentences, when he remarked the peculiar intonation, which sounded like a kind of song or chant. This appeared to explain the extreme rarity of stammering in China, and why the hesitation of M. Chaigneau was only observable in French, which he was chiefly in the habit of using.

The languages of the different tribes of North American Indians are remarkable for their melodious character; and Mr. Catlin, who has written a work upon their habits and

manners, and whose opportunities of observing these races have been abundant, states that he never remembers to have seen one among them affected with stammering. In our own country considerable differences exist between the mode in which the language is spoken in the northern and southern counties—the inhabitants of the north speaking somewhat harshly and abruptly when compared with those of the south and west. I should think it very probable, reasoning from analogy, that stammering was least prevalent in the south of England. This I have observed in many instances, namely, that patients from the north have much greater difficulty in applying the rules of rhythm to their speech than natives of the south or west, and they do not in consequence become cured of stammering by this means with equal facility.

In conclusion, there can be no doubt that the observance of rhythm, from the time of Demosthenes till now, has been always the grand educational process to which all others have been subsidiary. A system of vocal gymnastics devised on the principles laid down in the present treatise, will inevitably benefit, and but rarely fail to cure, any stammerer who puts them into faithful and continual operation. Other processes about which patients are left in the dark, and of the operation of which no rational explanation can be given, are generally abandoned after a time. But patients who are taught the means of bringing the voice under the influence of rhythm, see the reasonableness of the plan, and are willing to follow it perseveringly, besides which, they generally feel an entire confidence in its power to relieve them, a circumstance in itself an important step towards a cure.

FINIS.

